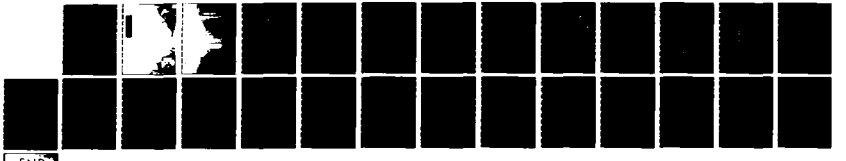
AD-A137 295 19313AT MLRS MISSILE NUMBER 4682 3726 3615 3693 4685 1/1
ROUND NUMBER 510 THRU 514(U) ARMY ELECTRONICS RESEARCH
AND DEVELOPMENT COMMAND WSMR NM ATM.. D C KELLER
UNCLASSIFIED NOV 83 ERADCOM/ASL-DR-1323 F/G 4/2 NL



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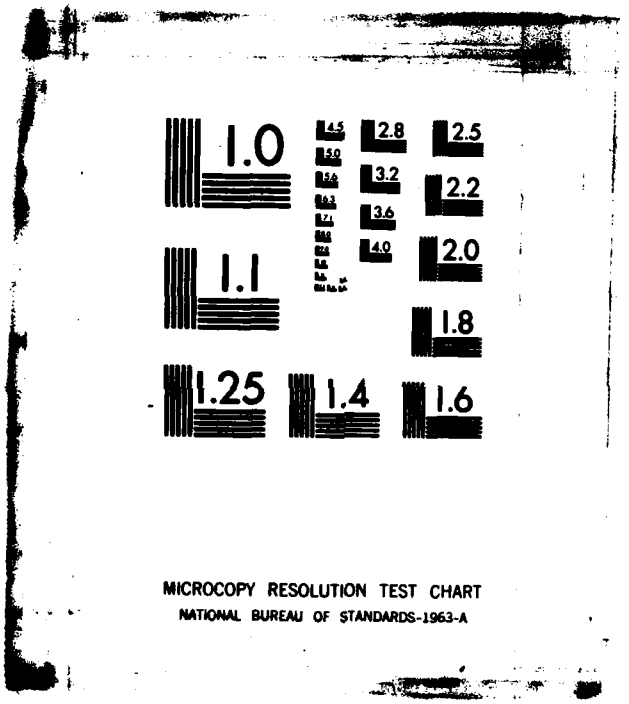

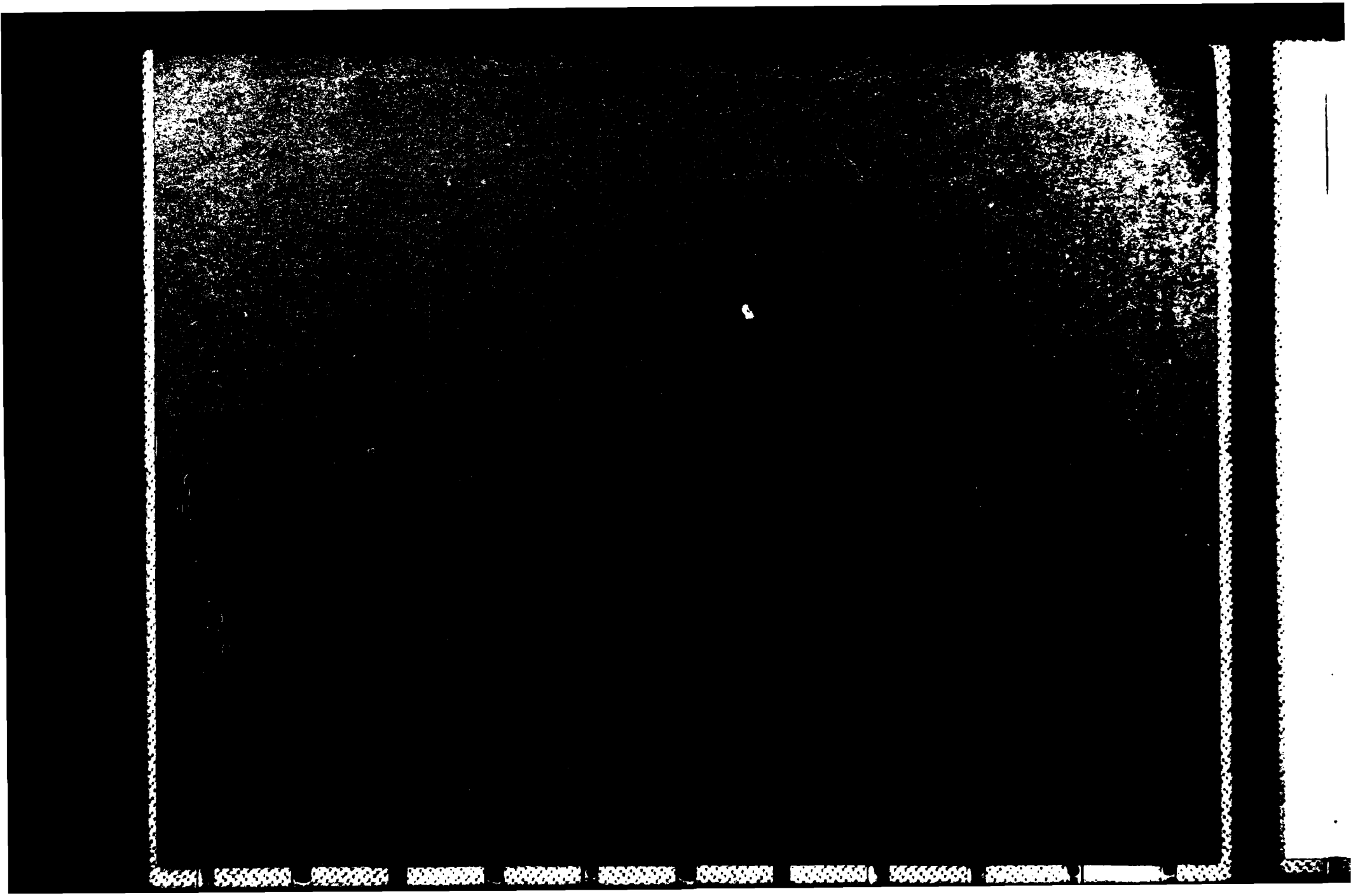

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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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1. REPORT NUMBER: DR-1323	2. GOVT. ACCESSION NO.: A137293
3. RECIPIENT'S CATALOG NUMBER:	
4. TITLE (and Subtitle): 19313AT MLRS Missile Number 4682, 3726, 3615, 3693, 4685 Round Number 510 thru 514	5. TYPE OF REPORT & PERIOD COVERED:
	6. PERFORMING ORG. REPORT NUMBER:
7. AUTHOR(s): White Sands Meteorological Team	8. CONTRACT OR GRANT NUMBER(s): DA Task 1F665702D127-02
9. PERFORMING ORGANIZATION NAME AND ADDRESS:	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS:
11. CONTROLLING OFFICE NAME AND ADDRESS: US Army Electronics Research & Development Cmd Atmospheric Sciences Laboratory White Sands Missile Range, New Mexico 88002	12. REPORT DATE: 9 November 1983
	13. NUMBER OF PAGES: 24
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): US Army Electronics Research and Development Cmd Adelphi, MD 20783	15. SECURITY CLASS. (of this report): UNCLASSIFIED
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Meteorological data gathered for the launching of the 19313AT MLRS, Missile Number 4682, 3726, 3615, 3693, 4685, Round Number 510 thru 514 are presented in tabular form.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

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CONTENTS PAGE

INTRODUCTION

19313AT MLRS, Missile Numbers 4682, 3726, 3615, 3693, and 4685. Round Numbers 510 thru 514, were launched from Tula Gate, White Sands Missile Range (WSMR), New Mexico, at 1221:18, 1221:22, 1221:27, 1221:31, and 1221:36 MST, 9 Nov 1983. The scheduled launch times were 1130 MST with a 4.5 second separation.

DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature (°C), relative humidity, dew point (°C), density (gm/m^3), wind direction and speed, and cloud cover were made at the Tula Gate Met Site at T-0 minutes.

(2) Anemometer data were provided from existing tower-mounted anemometers at Tula Gate. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

b. Upper Air

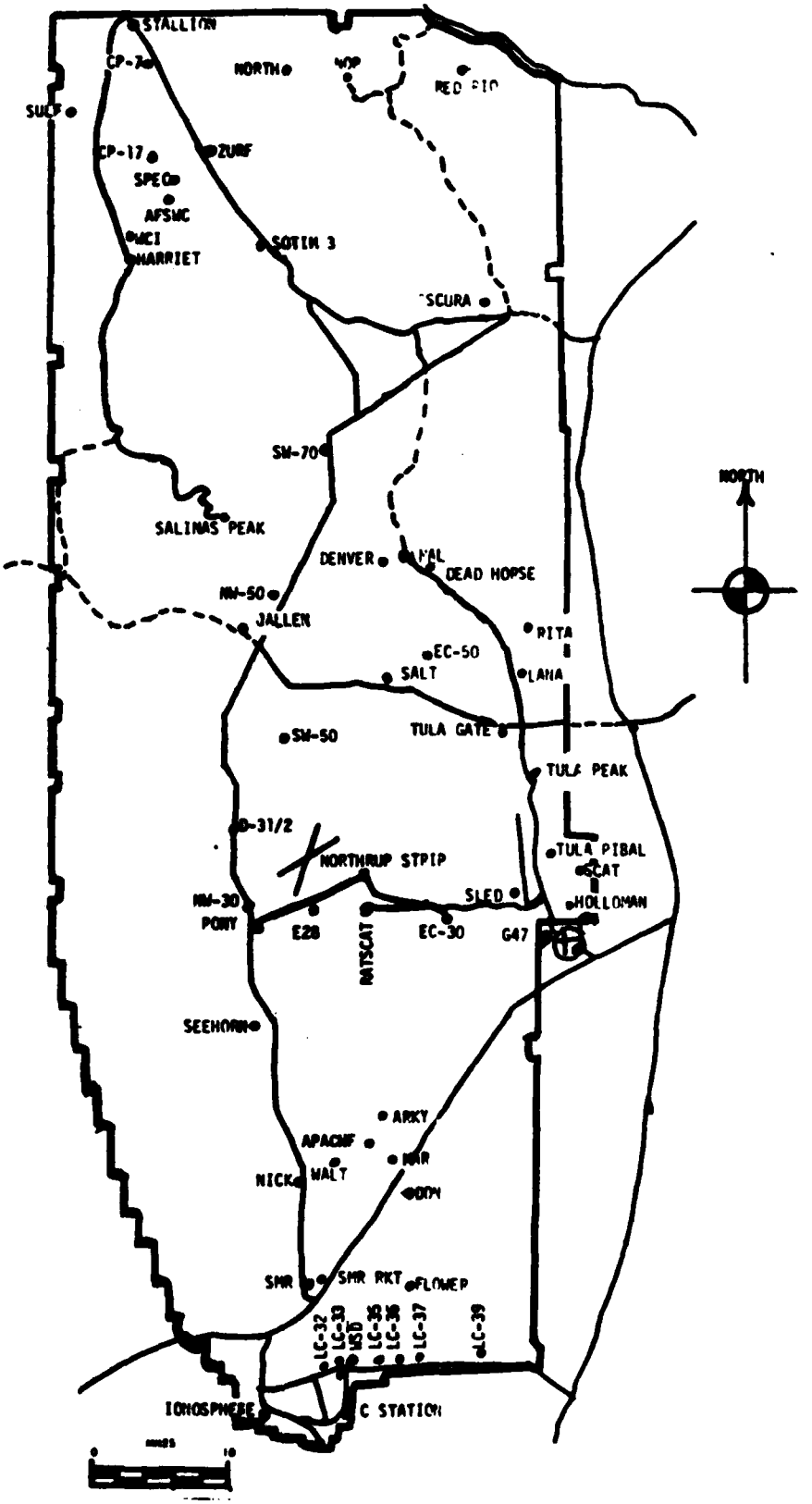
(1) Low level wind data were obtained from pilot-balloon observations at:

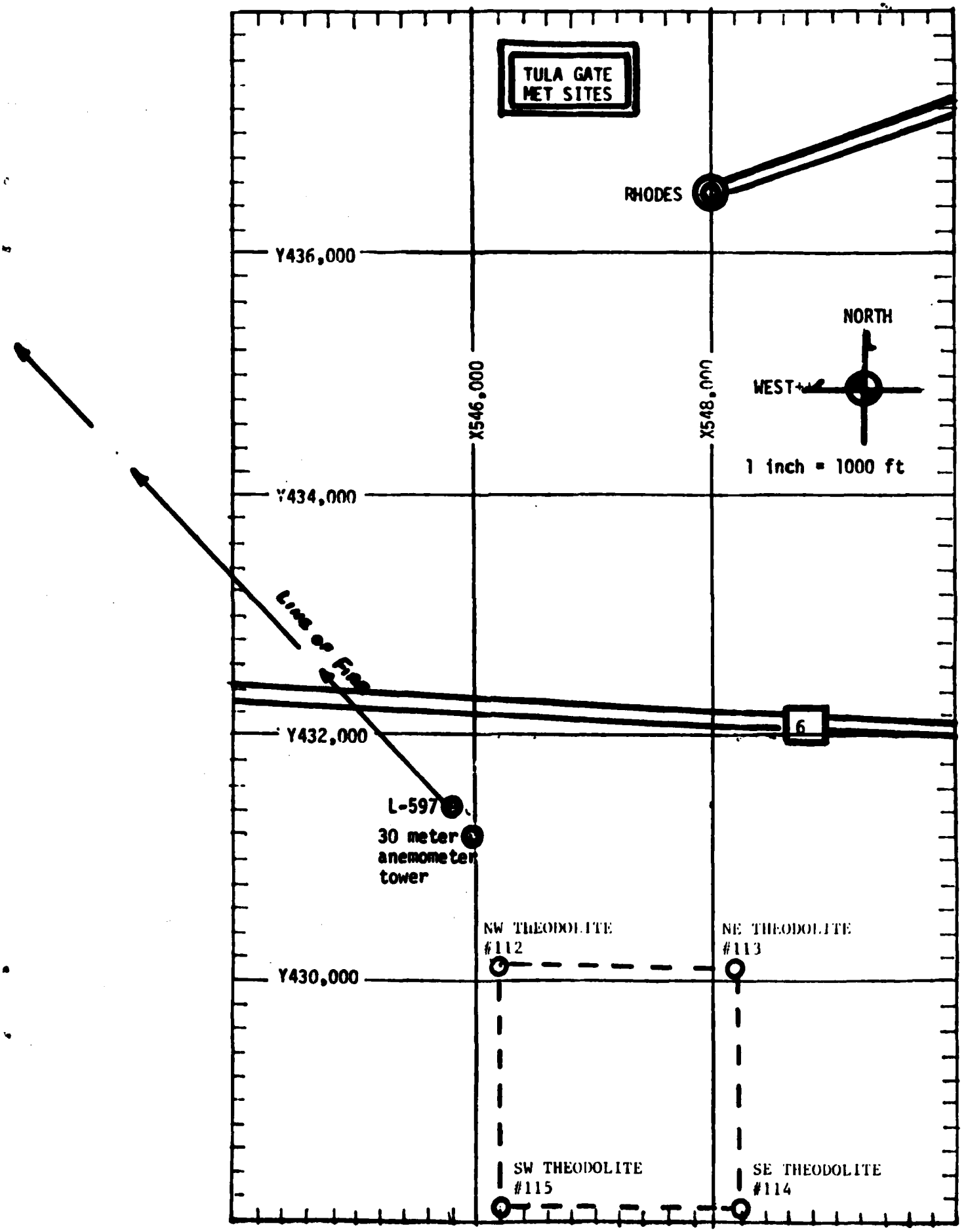
SITE AND ALTITUDE	
Tula Gate	2 km
MAL	2 km

(2) Air structure data (rawinsonde) were collected at the following Met Sites.

SITE AND TIME
RITA 0800 MST
RITA 1100 MST
RITA 1215 MST

WSMR METEOROLOGICAL SITES




TULA GATE
MET SITES
RHODES
Y436,000
NORTH
WEST
X546,000
X548,000
1 inch = 1000 ft
Y434,000
Line of Fire
6
Y432,000
L-597
30 meter
anemometer
tower
NW THEODOLITE
#112
NE THEODOLITE
#113
Y430,000
SW THEODOLITE
#115
SE THEODOLITE
#114

PROJECT SURFACE OBSERVATION

TABLE 1

STATION Tula Gate

DATE 09 (DAY) 11 (MONTH) 83 (YEAR)

X= 545,785.2 Y= 431,459.0 H= 4103.3

TIME M S T	PRESSURE mbs	TEMPERATURE °F	TEMPERATURE °C	DEW POINT °F	DEW POINT °C	RELATIVE HUMIDITY %	DENSITY gm/m³	WIND DIRECTION degs Tn	WIND SPEED kts	WIND CHARACTER kts	VISIBILITY
1221	881.1		14.0		-2.6	31	1068.2	350	9		30

OBSTRUCTIONS TO VISIBILITY	CLOUDS 1st LAYER AMT	1st LAYER TYPE	1st LAYER HGT	2nd LAYER AMT	2nd LAYER TYPE	2nd LAYER HGT	3rd LAYER AMT	3rd LAYER TYPE	3rd LAYER HGT	REMARKS
	2	Ci	25,000							

PSYCHROMETRIC COMPUTATION

TIME: MST	1221		
DRY BULB TEMP.	14.0		
WET BULB TEMP.	6.2		
WET BULB DEPR.	7.8		
DEW POINT	-2.6		
RELATIVE HUMID.	31		

TABLE 2 ANEMOMETER DATA - 30 Ft Level of 30 Meter Tower

X= 545,944.89 Y= 431,158.70 H= 4102.47 (BASE)

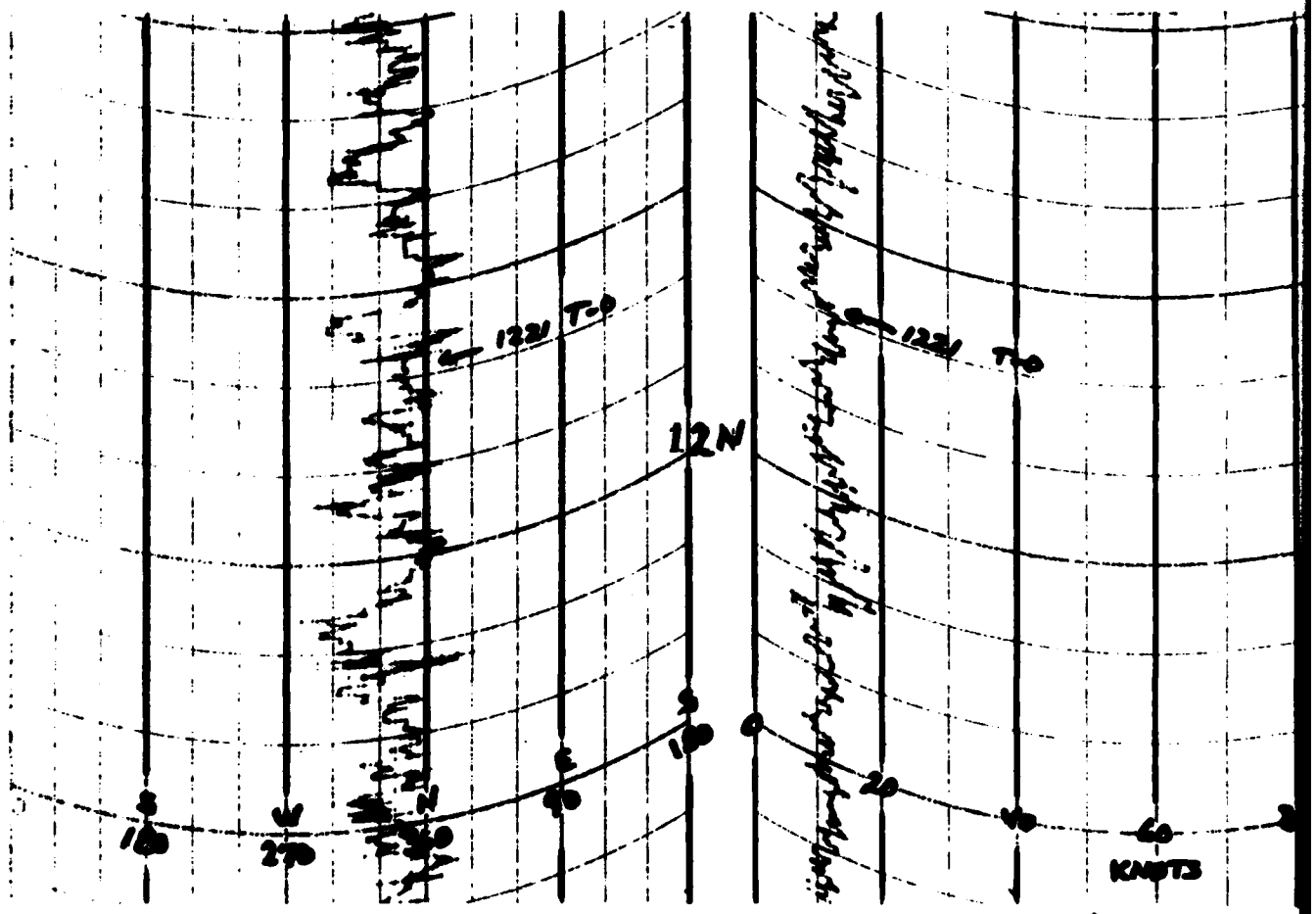


TABLE 3

ANEMOMETER DATA - 60 Ft Level of 30 Meter Tower

X= 545,944.89 Y= 431,158.70 H= 4102.47 (BASE)

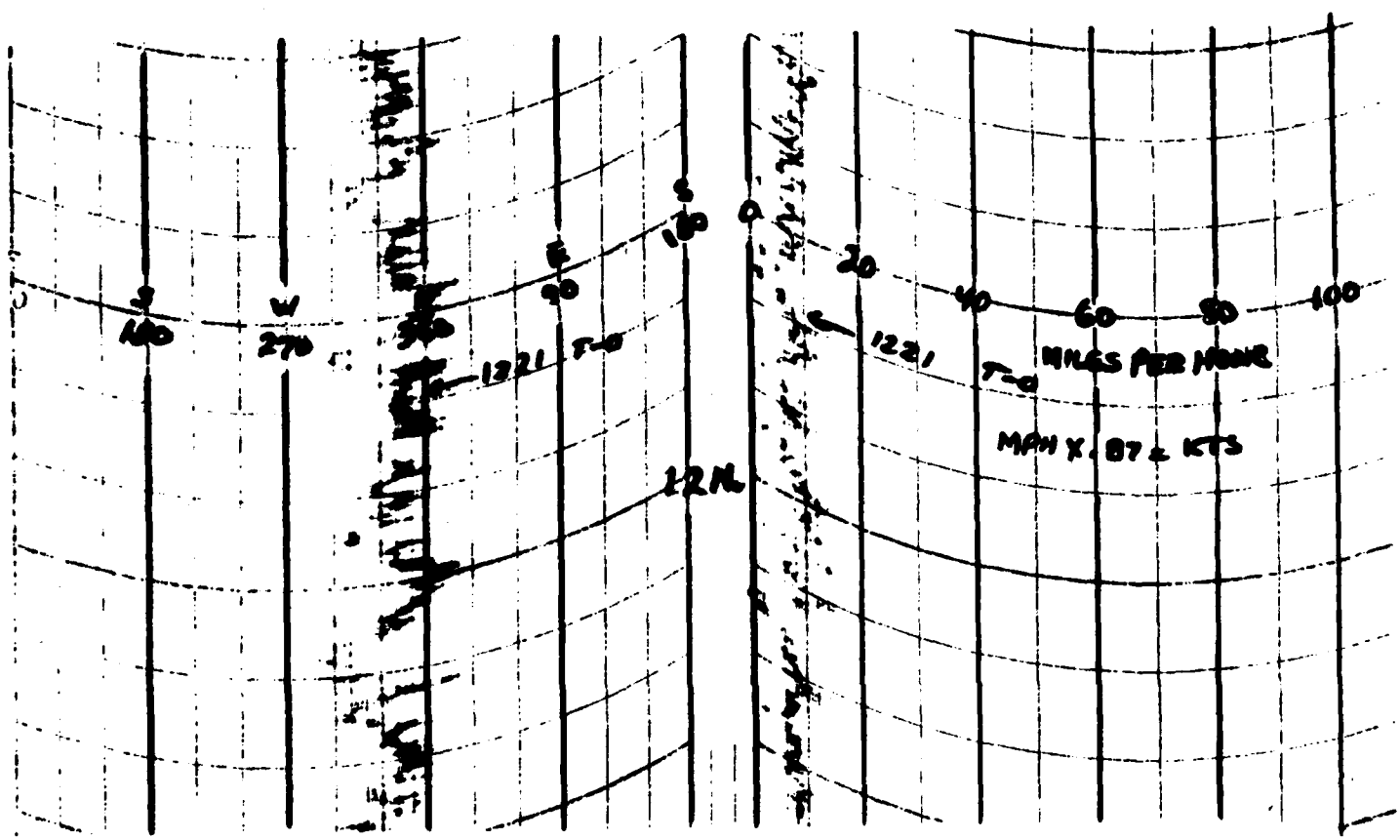


TABLE 4 ANEMOMETER DATA - 90 Ft Level of 30 Meter Tower

X= 545,944.89 Y= 431,158.70 H= 4102.47 (BASE)

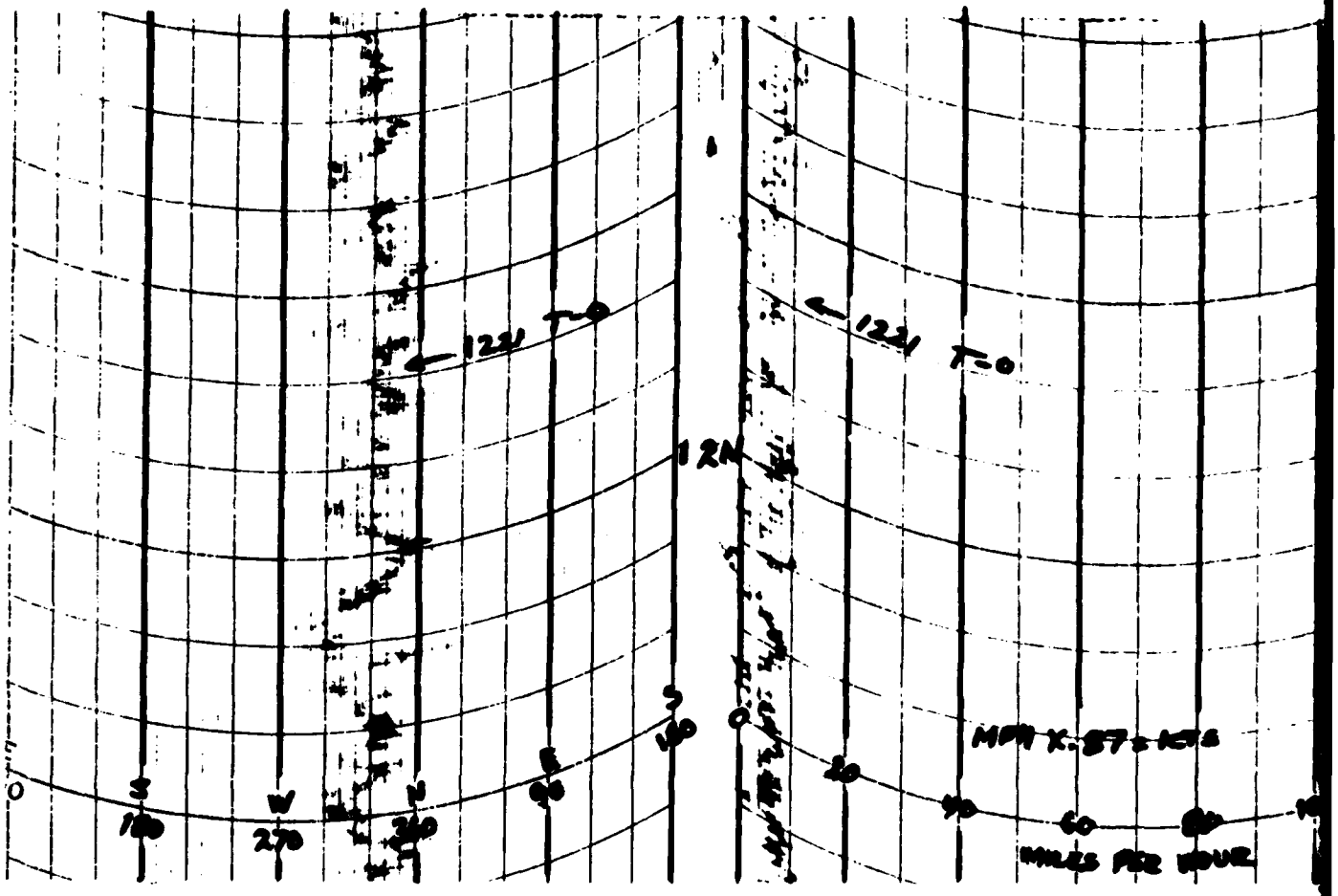


TABLE 5

T-TIME PILOT-BALLOON MEASURED WIND DATA

DATE 9 November 1983

SITE: Tula Gate
TIME: 1221 MST
WSTM COORDINATES:
X= 546,204.20
Y= 430,125.39
H= 4,108.59

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	350	09
150	355	10
210	002	12
270	354	12
330	347	11
390	339	10
500	330	09
650	333	11
800	338	12
950	003	08
1150	025	05
1350	339	08
1550	309	09
1750	287	14
2000	286	22

Data obtained from a Double Theodolite Tracked pilot-balloon observation.

SITE: MAL
TIME 1221 MST
WSTM COORDINATES:
X= 509,421.05
Y= 497,563.78
H= 4,133.09

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	350	08
150	348	13
210	344	13
270	342	13
330	341	12
390	347	12
500	003	12
650	011	12
800	003	14
950	353	15
1150	331	14
1350	326	21
1550	313	19
1750	288	15
2000	309	13

Data obtained from a Single Theodolite Tracked pilot-balloon observation.

TABLE 6

AIMING AND T-TIME COMPUTER MET MESSAGE DATA
09 November 1985

RITA 0800 MST		RITA 1100 MST		RITA 1215 MST	
METCM1332062		METCM1332062		METCM1332062	
0911500128880		091800128882		091930128881	
00640015	28090880	00622009	28590882	00604006	28640881
01628020	28090870	01621012	28360872	01535010	28510870
02007022	27930843	02624012	28010846	02615005	28220844
03627018	27650803	03626011	27630805	03008009	27840804
04582018	27500755	04593012	27540757	04570009	27630756
05539012	27540710	05540013	27720712	05535016	27670711
06603020	27560667	06580016	27680669	06567017	27710669
07573025	27410627	07582025	27270629	07571026	27370629
08553033	27050589	08554029	26980591	08551028	27050590
09537028	26690553	09541028	26780554	09548027	26880554
10563028	26340518	10546026	26360520	10544027	26480520
11559032	25990486	11542028	25950487	11536028	26070487
12548032	25420440	12542032	25350441	12541032	25500441
13545034	24650384	13534030	24580385	13542036	24740385
14555035	23770333	14553029	23750334	14548032	23950335
15577040	22920288	15567034	22820289	15556035	23110290
16580033	22000248	16574037	21970248	16573034	22260250

SIGNIFICANT LEVEL DATA

STATION ALTITUDE 4186.74 FEET MSL
9 NOV. 83 0800 HRS MST
ASCENSION NO. 9

313U210009
RITA

GEODETIC COORDINATES
33.18295 LAT DEG
106.15114 LON DEG

Table 7

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT
880.2	4186.7	7.0	-2.2	52.0
860.8	4534.1	7.5	-3.4	49.0
850.0	5129.0	5.9	-8.0	39.0
816.2	6216.0	4.0	-9.3	37.0
786.6	7198.4	1.9	-13.8	30.0
767.0	7865.4	.8	-13.2	34.0
754.3	8307.0	2.0	-12.2	34.0
700.0	10287.2	2.0	-16.4	24.0
690.5	10649.6	2.4	-16.1	24.0
644.6	12474.7	2.1	-15.4	26.0
617.1	13620.0	-.3	-17.0	27.0
547.8	16720.1	-6.9	-22.7	27.0
536.8	17239.2	-8.3	-20.7	36.0
500.0	19039.6	-11.9	-24.2	35.0
443.0	22047.8	-18.7	-28.6	41.0
427.9	22895.3	-20.5	-31.6	36.0
400.0	24522.4	-25.1	-35.6	30.0
384.1	25489.7	-26.4	-37.5	34.0
317.5	29905.1	-38.9	-47.8	38.0
300.0	31178.1	-41.7		
250.0	35150.3	-52.8		
200.6	38914.6	-62.5		
202.0	39567.7	-62.8		
200.0	39764.7	-64.9		

STATION ALTITUDE 4186.74 FEET MSL
9 NOV. 83 0800 HRS, MST
ASCENSION NO. 0

METEOROLOGICAL DATA
3150210009
PITA

GEODETIC COORDINATES
33.1829 LAT DEG
106.1511 LON DEG

Table 8

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
4186.7	880.2	7.0	-2.2	52.0	1092.1	652.6	360.0	15.0	1.000268
4500.0	870.1	7.4	-3.2	46.7	1077.9	653.5	.3	15.6	1.000263
5000.0	854.1	6.2	-6.9	38.2	1063.2	651.7	.6	16.7	1.000254
5500.0	838.5	5.3	-8.5	36.3	1047.5	650.5	1.0	17.7	1.000249
6000.0	822.8	4.4	-9.1	36.8	1031.4	649.5	1.3	18.8	1.000245
6500.0	807.5	3.4	-10.6	35.0	1016.0	648.3	355.2	19.3	1.000240
7000.0	792.5	2.3	-12.9	31.4	1001.1	646.9	344.4	20.0	1.000234
7500.0	777.7	1.4	-13.5	31.8	985.7	645.9	340.5	19.7	1.000230
8000.0	763.1	1.2	-12.9	34.0	968.0	645.6	330.6	18.1	1.000227
8500.0	748.8	2.0	-12.5	33.0	947.0	646.6	320.6	16.7	1.000223
9000.0	734.8	2.0	-13.5	30.5	929.3	646.6	312.1	14.4	1.000218
9500.0	721.1	2.0	-14.6	28.0	912.0	646.6	307.3	13.0	1.000213
10000.0	707.6	2.0	-15.7	25.5	895.1	646.5	313.3	12.5	1.000208
10500.0	694.4	2.2	-16.2	24.0	877.6	646.6	320.7	12.9	1.000204
11000.0	681.4	2.3	-15.9	24.4	860.9	646.9	329.2	15.9	1.000201
11500.0	668.7	2.3	-15.7	24.9	845.0	646.9	334.9	19.1	1.000197
12000.0	656.2	2.2	-15.5	25.5	829.4	646.6	332.8	22.7	1.000194
12500.0	644.0	2.0	-15.4	26.0	814.3	646.6	330.5	26.4	1.000191
13000.0	631.9	1.0	-16.1	26.5	802.1	645.4	325.6	28.5	1.000187
13500.0	620.1	-.0	-16.8	26.9	790.1	644.1	319.1	29.7	1.000184
14000.0	608.5	-1.1	-17.7	27.0	778.2	642.9	314.0	30.5	1.000181
14500.0	597.7	-2.2	-18.6	27.0	766.4	641.6	309.8	30.2	1.000178
15000.0	585.5	-3.2	-19.5	27.0	754.8	640.3	306.4	29.8	1.000175
15500.0	574.1	-4.3	-20.4	27.0	743.4	639.0	304.8	28.7	1.000172
16000.0	563.2	-5.4	-21.4	27.0	732.1	637.7	303.5	27.7	1.000169
16500.0	552.5	-6.4	-22.3	27.0	721.1	636.5	305.5	27.0	1.000166
17000.0	541.8	-7.7	-21.5	31.9	710.4	635.0	307.6	26.4	1.000164
17500.0	531.5	-8.8	-21.2	35.9	699.7	633.6	310.6	27.5	1.000162
18000.0	520.9	-9.8	-22.2	35.6	688.6	632.4	313.8	28.7	1.000159
18500.0	510.8	-10.8	-23.1	35.3	677.8	631.2	315.1	30.0	1.000156
19000.0	500.6	-11.8	-24.1	35.0	667.1	630.0	315.4	31.2	1.000153
19500.0	490.8	-12.9	-24.9	35.9	656.7	628.6	315.3	32.2	1.000151
20000.0	481.0	-14.1	-25.6	36.9	646.4	627.2	314.4	32.7	1.000148
20500.0	471.5	-15.2	-26.3	37.0	636.4	625.9	313.4	33.1	1.000146
21000.0	462.1	-16.3	-27.0	38.0	626.5	624.5	311.6	32.8	1.000143
21500.0	452.9	-17.5	-27.6	39.0	616.7	623.1	309.9	32.6	1.000141
22000.0	443.9	-18.6	-28.6	40.0	607.1	621.7	306.0	31.2	1.000139
22500.0	434.9	-19.7	-30.2	39.3	597.4	620.4	306.0	29.7	1.000136
23000.0	426.0	-20.8	-31.9	36.0	587.9	619.0	305.7	29.6	1.000133
23500.0	417.5	-22.2	-33.2	36.0	579.1	617.2	306.2	29.0	1.000131

STATION ALTITUDE 4186.74 FEET MSL
9 NOV. 83 0800 HRS, MST
ASCENSION NO. 9

UPPER AIR DATA
8310210009
WSTA

GEODETIC COORDINATES
33.16290 LAT DEG
106.15116 LON DEG

Table 8 (cont'd)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
24000.0	400.8	-23.6	-34.4	36.0	570.5	615.1	306.4	30.8	1.000129
24500.0	400.4	-25.0	-35.7	36.0	562.0	613.7	306.4	32.2	1.000127
25000.0	392.1	-25.7	-36.0	35.0	551.9	612.9	306.1	33.3	1.000125
25500.0	383.9	-26.4	-37.3	34.9	542.0	612.0	305.6	34.2	1.000122
26000.0	375.7	-27.8	-38.7	34.5	533.5	610.2	305.7	34.7	1.000120
26500.0	367.7	-29.3	-39.0	34.9	525.1	608.5	306.3	34.7	1.000118
27000.0	359.9	-30.7	-41.0	35.4	517.0	606.7	307.3	34.6	1.000116
27500.0	352.2	-32.1	-42.1	35.8	508.9	604.9	308.9	34.0	1.000114
28000.0	344.7	-33.5	-43.3	36.3	501.0	603.1	310.6	33.8	1.000112
28500.0	337.3	-34.9	-44.3	36.7	493.2	601.3	312.3	34.9	1.000111
29000.0	330.1	-36.3	-45.0	37.2	485.6	599.5	313.9	36.0	1.000109
29500.0	323.1	-37.8	-46.0	37.6	478.1	597.7	316.2	38.3	1.000107
30000.0	316.2	-39.1	-48.0	35.2**	470.6	596.0	318.2	40.6	1.000105
30500.0	309.2	-40.2	-54.3	20.2**	462.4	594.6	319.8	41.7	1.000103
31000.0	302.4	-41.3	-65.4	5.3**	454.4	593.2	321.3	42.0	1.000101
31500.0	295.6	-42.6			446.7	591.5	322.8	42.4	1.000099
32000.0	288.9	-44.0			439.2	589.7	323.6	41.3	1.000098
32500.0	282.3	-45.4			431.9	587.9	324.3	39.9	1.000096
33000.0	275.9	-46.8			424.7	586.1	325.0	38.5	1.000095
33500.0	269.7	-48.2			417.6	584.3	325.4	37.4	1.000093
34000.0	263.6	-49.6			410.7	582.5	325.9	36.2	1.000091
34500.0	257.6	-51.0			403.9	580.7	326.3	35.0	1.000090
35000.0	251.7	-52.4			397.2	578.8	326.7	33.4	1.000088
35500.0	245.8	-53.7			390.2	577.1	327.1	31.8	1.000087
36000.0	240.0	-55.0			383.2	575.4	328.0	30.3	1.000085
36500.0	234.3	-56.3			376.3	573.7	329.0	28.8	1.000084
37000.0	228.7	-57.6			369.6	572.0	329.1	29.0	1.000082
37500.0	223.3	-58.9			363.0	570.3	328.5	30.2	1.000081
38000.0	218.0	-60.1			356.5	568.6	328.0	32.1	1.000079
38500.0	212.8	-61.4			350.1	566.9	327.7	34.0	1.000078
39000.0	207.7	-62.5			343.6	565.4			1.000077
39500.0	202.7	-62.8			335.6	565.1			1.000075

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE [illegible] FEET MSL
[illegible] NOV. 83 [illegible] MST
ASCENSION NO. [illegible]

MANDATORY LEVELS
313YY10009
PITA

GEODETIC COORDINATES
33.1829N LAT DEG
106.1511W LON DEG

Table 9

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE PERCENT	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS
850.0	5126.	5.9	-8.0	36.	.7	16.9
800.0	6745.	2.9	-11.7	33.	352.3	19.6
750.0	8451.	2.0	-12.5	33.	321.3	17.0
700.0	10278.	2.0	-15.4	24.	316.8	12.3
650.0	12241.	2.1	-15.4	26.	331.6	24.6
600.0	14347.	-1.9	-18.3	27.	311.0	30.3
550.0	16597.	-6.7	-22.5	27.	305.9	26.9
500.0	19014.	-11.9	-28.2	35.	315.4	31.3
450.0	21631.	-17.8	-28.0	40.	309.3	32.3
400.0	24483.	-25.1	-35.3	36.	306.4	32.2
350.0	27625.	-32.5	-42.5	36.	309.5	33.8
300.0	31118.	-41.7			321.8	42.1
250.0	35076.	-52.8			320.8	33.0
200.0	39676.	-64.9				

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4146.74 FEET MSL
[illegible] 1100 [illegible] PST
ASCENSION NO. 19

SIGNIFICANT LEVEL DATA
[illegible]210010
PITA

GEODETIC COORDINATES
33.1629 LAT DEG
106.1514 LON DEG

Table 10

PRESSURE MILLIBARS	GEOPOTENTIAL ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	REL.HUM. PERCENT
88[illegible].2	4136.7	11.7	2.7	50.0
86[illegible].7	4765.2	8.3	-11.1	24.0
85[illegible].0	5197.6	7.1	-11.1	20.0
80[illegible].5	6703.4	2.5	-13.7	29.0
79[illegible].3	7009.0	2.3	-15.2	20.0
78[illegible].6	7401.6	1.0	-17.0	23.0
76[illegible].8	8115.0	1.3	-19.1	20.0
74[illegible].9	8536.1	2.6	-17.5	21.0
72[illegible].9	9282.3	3.8	-17.7	19.0
71[illegible].1	9705.5	3.5	-16.5	18.0
70[illegible].0	10364.7	4.1	-16.0	18.0
671.7	11466.3	4.1	-17.4	19.0
621.7	13511.4	-1.6	-21.6	20.0
587.2	14993.0	-4.1	-24.8	18.0
57[illegible].4	15389.7	-3.6	-24.4	18.0
565.9	15956.5	-4.2	-19.9	28.0
500.0	19117.1	-12.3	-26.3	30.0
475.1	20394.1	-15.2	-27.2	35.0
444.1	22057.9	-19.5	-25.6	57.0
437.8	22406.5	-20.5	-28.0	51.0
432.9	22680.4	-20.9	-30.4	42.0
400.0	24587.5	-24.8	-35.2	37.0
396.7	24785.6	-25.3	-36.2	35.0
37[illegible].9	25875.6	-28.4	-34.0	58.0
353.1	27725.4	-32.6	-41.5	41.0
341.7	28351.7	-34.2	-45.1	32.0
317.3	29975.3	-38.8	-49.2	32.0
300.0	31230.9	-43.0		
250.0	35190.0	-53.0		
234.3	36[illegible].5	-56.5		
22[illegible].1	37482.2	-58.7		
200.0	39006.5	-64.2		

[illegible] ELEVATION 4186.74 FEET MSL
9 NOV 83 1100 HRS MST
ASSUMED TO BE [illegible]

[illegible] AIR DATA
[illegible]0210010
DATA

GEODETIC COORDINATES
33-10.29N LAT DEG
106-15.11W LON DEG

Table 11

GEOPOTENTIAL ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
4186.7	802.2	11.7	2.7	54.0	1075.5	658.6	350.0	8.9	1.000274
4500.0	787.1	9.9	-3.9	37.8	1071.4	656.0	350.6	9.5	1.000260
5000.0	765.2	7.6	-11.1	25.1	1061.0	653.2	351.9	10.4	1.000249
5500.0	744.5	6.2	-11.6	26.6	1047.0	651.5	352.9	11.3	1.000245
6000.0	724.4	4.6	-12.4	27.6	1033.3	649.7	353.7	12.2	1.000242
6500.0	704.6	3.1	-13.3	28.6	1019.9	647.9	351.3	12.4	1.000238
7000.0	685.6	2.3	-15.1	26.1	1004.0	646.9	345.8	12.0	1.000233
7500.0	667.7	1.8	-17.9	22.6	989.9	645.3	340.1	11.7	1.000228
8000.0	650.1	1.3	-18.9	20.5	970.6	645.6	334.4	11.3	1.000223
8500.0	632.8	2.5	-17.6	20.4	948.0	647.1	327.9	11.2	1.000219
9000.0	616.8	3.3	-17.6	19.8	927.5	648.1	321.0	11.3	1.000214
9500.0	601.1	3.7	-18.0	18.6	909.2	648.4	313.5	11.7	1.000210
10000.0	585.6	3.7	-18.4	18.0	892.2	648.5	306.3	12.3	1.000206
10500.0	570.5	4.1	-18.0	18.1	874.4	648.9	310.2	13.0	1.000202
11000.0	555.5	4.1	-17.7	18.6	858.2	649.0	315.7	13.8	1.000199
11500.0	540.9	4.0	-17.5	19.0	842.5	648.9	321.7	15.9	1.000195
12000.0	526.5	2.6	-18.5	19.3	830.9	647.2	326.5	18.6	1.000192
12500.0	512.4	1.2	-19.5	19.5	819.5	645.5	327.6	21.0	1.000189
13000.0	498.8	-.2	-20.5	19.7	808.3	643.9	325.7	22.8	1.000186
13500.0	485.6	-1.6	-21.5	20.0	797.3	642.2	324.0	24.7	1.000183
14000.0	472.8	-2.4	-22.6	19.3	784.6	641.2	319.4	26.5	1.000180
14500.0	460.5	-3.5	-23.7	18.7	772.1	640.2	315.4	28.4	1.000177
15000.0	448.6	-4.1	-24.8	18.0	759.8	639.2	310.8	28.7	1.000174
15500.0	437.0	-5.7	-23.4	19.9	744.2	637.7	306.8	29.0	1.000171
16000.0	425.9	-4.3	-20.0	28.0	731.4	639.0	305.2	28.3	1.000169
16500.0	415.0	-5.6	-21.8	28.3	720.7	637.5	304.5	27.6	1.000167
17000.0	404.2	-6.9	-22.0	29.7	710.2	635.9	306.6	27.2	1.000164
17500.0	393.7	-6.2	-23.0	29.0	699.8	634.4	307.6	26.8	1.000161
18000.0	383.4	-9.4	-24.0	29.3	689.6	632.8	306.7	26.2	1.000158
18500.0	373.2	-10.7	-25.0	29.6	679.6	631.3	305.7	26.0	1.000156
19000.0	363.3	-12.0	-26.0	29.9	669.7	629.7	304.8	26.7	1.000153
19500.0	353.4	-13.2	-26.5	31.5	659.4	628.3	304.5	27.6	1.000151
20000.0	343.8	-14.5	-26.8	33.5	649.2	626.9	304.9	28.8	1.000148
20500.0	334.1	-15.5	-27.0	36.4	639.2	625.5	305.3	29.9	1.000146
21000.0	324.6	-16.8	-26.3	43.0	629.5	624.0	305.1	30.0	1.000144
21500.0	315.3	-18.1	-26.0	49.6	620.0	622.4	304.9	30.0	1.000142
22000.0	306.1	-19.4	-25.3	56.2	610.6	620.8	304.9	31.1	1.000140
22500.0	296.1	-20.6	-28.7	47.9	601.4	619.2	305.0	32.5	1.000137
23000.0	287.2	-21.6	-31.2	41.2	593.3	618.1	304.8	33.5	1.000134
23500.0	278.4	-22.6	-32.3	39.9	585.5	616.8	304.3	34.2	1.000132

UPPER AIR DATA
STATION ALTITUDE 4136.79 FT MSL 3130210010 GEODETIC COORDINATES
9 NOV. 83 1100 HRS MST PITA 33.10295 LAT DEG
ASCENSION NO. 10 106.15114 LON DEG

Table 11 (cont'd)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
24000.0	409.9	-23.6	-33.7	38.5	572.0	615.5	303.9	34.8	1.000130
24500.0	401.5	-24.6	-35.0	37.2	562.0	614.3	303.2	33.6	1.000127
25000.0	393.1	-25.9	-35.6	39.5	553.8	612.7	302.3	31.6	1.000125
25500.0	384.9	-27.3	-36.5	50.1	545.4	610.9	301.2	29.7	1.000124
26000.0	375.9	-28.7	-34.6	56.7	537.0	609.2	299.5	28.3	1.000122
26500.0	368.9	-30.0	-36.7	51.6	528.4	607.6	300.2	28.5	1.000119
27000.0	362.1	-31.3	-38.9	46.4	520.0	606.0	303.1	30.4	1.000117
27500.0	353.5	-32.5	-41.2	41.3	511.7	604.4	306.9	30.8	1.000115
28000.0	345.9	-33.5	-43.4	35.8	502.8	603.1	310.8	31.1	1.000113
28500.0	338.5	-34.6	-45.4	32.0	494.5	601.7	312.8	30.0	1.000111
29000.0	331.2	-36.0	-46.7	32.0	486.5	599.9	313.7	27.9	1.000109
29500.0	324.0	-37.5	-48.0	32.0	478.8	598.1	314.2	26.7	1.000107
30000.0	317.0	-38.9	-49.4	31.4**	471.3	596.3	314.0	26.3	1.000105
30500.0	310.0	-40.6	-55.2	18.6**	464.2	594.2	315.0	28.1	1.000104
31000.0	303.1	-42.2	-65.4	5.9**	457.3	592.0	316.5	31.2	1.000102
31500.0	296.3	-43.7			449.8	590.1	317.4	34.0	1.000100
32000.0	289.6	-44.9			442.0	588.5	318.0	36.6	1.000098
32500.0	283.0	-46.2			434.4	586.9	318.7	38.4	1.000097
33000.0	276.5	-47.5			426.9	585.3	319.7	38.6	1.000095
33500.0	270.2	-48.7			419.5	583.6	320.6	38.8	1.000093
34000.0	264.1	-50.0			412.3	582.0	321.5	38.1	1.000092
34500.0	258.1	-51.3			405.2	580.3	322.5	37.2	1.000090
35000.0	252.2	-52.5			398.2	578.7	323.2	36.3	1.000089
35500.0	246.3	-53.8			391.2	577.0	323.4	35.6	1.000087
36000.0	240.6	-55.1			384.3	575.3	323.6	34.9	1.000086
36500.0	234.9	-56.4			377.5	573.6	323.3	33.7	1.000084
37000.0	229.4	-57.6			370.6	572.0	322.9	32.6	1.000083
37500.0	223.9	-58.7			363.8	570.4	323.3	32.1	1.000081
38000.0	218.5	-59.9			357.0	568.9	324.3	32.0	1.000080
38500.0	213.2	-61.1			350.3	567.3			1.000078
39000.0	208.1	-62.3			343.7	565.7			1.000077
39500.0	203.0	-63.5			337.3	564.1			1.000075

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4186.74 FEET MSL   MANDATORY LEVELS   GEODETIC COORDINATES
9 NOV. 83   1100 HRS MST   3130210010   33.1829, LAT DEG
ASCENSION NO. 19   RITA   106.1511, LON DEG

Table 12

PRESSURE	GEOPOTENTIAL	TEMPERATURE AIR	TEMPERATURE DEWPOINT	REL.HUM.	WIND DATA DIRECTION	WIND DATA SPEED
MILLIBARS	FEET	DEGREES CENTIGRADE	DEGREES CENTIGRADE	PERCENT	DEGREES(TN)	KNOTS
850.0	5194.	7.1	-11.1	26.	352.3	10.8
800.0	6818.	2.4	-14.2	28.	347.9	12.2
750.0	8519.	2.6	-17.5	21.	327.6	11.2
700.0	10355.	4.1	-18.0	16.	300.6	12.8
650.0	12327.	1.7	-19.2	19.	320.4	20.4
600.0	14422.	-3.2	-23.6	19.	319.9	26.1
550.0	16672.	-6.1	-21.4	28.	305.3	27.5
500.0	19071.	-12.3	-26.3	30.	304.6	26.9
450.0	21703.	-16.7	-25.9	53.	304.9	30.3
400.0	24548.	-24.8	-35.2	37.	303.1	33.3
350.0	27691.	-33.0	-42.2	39.	308.6	30.9
300.0	31171.	-43.0			310.9	32.5
250.0	35116.	-53.0			323.3	30.1
200.0	39714.	-64.2				

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4186.74 FEET MSL
4 NOV. 63 1215 MST
ASCENSION NO. 11

SIGNIFICANT LEVEL DATA
31302100 11
WITA

GEODETIC COORDINATES
33.10295 LAT DEG
106.15114 LON DEG

Table 13

PRESSURE MILLIBARS	GEOPOTENTIAL ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES	DEWPOINT CENTIGRADE	R.L.+NM. PERCENT
880.7	4186.7	12.7	-4.4	30.0
861.4	4794.4	10.4	-11.6	20.0
850.0	5157.4	9.3	-12.5	20.0
776.4	7589.7	2.2	-15.7	25.0
767.8	7895.5	3.1	-20.2	10.0
723.6	9462.1	3.0	-21.1	15.0
715.2	9772.9	3.5	-20.7	15.0
700.0	10345.0	3.4	-20.7	15.0
681.0	11079.6	4.7	-19.7	15.0
655.6	12093.7	3.0	-21.1	15.0
605.6	14176.9	-2.0	-25.1	15.0
570.4	15536.4	-3.5	-26.3	15.0
565.9	15949.3	-3.1	-22.3	21.0
500.0	19123.6	-11.1	-23.5	35.0
474.2	20453.8	-14.3	-21.5	54.0
450.3	22340.2	-18.5	-24.3	60.0
431.4	22790.7	-19.7	-26.0	57.0
411.5	23936.5	-22.4	-26.4	58.0
400.0	24622.1	-23.6	-30.4	53.0
377.9	25979.9	-27.1	-36.1	42.0
345.9	28059.2	-31.7	-43.7	29.0
306.7	30816.5	-39.1	-50.0	30.0
300.0	31314.0	-40.0		
250.0	35322.4	-50.4		
224.3	37620.7	-56.7		
208.2	39162.7	-60.5		
200.0	39985.6	-61.4		

STATION ALTITUDE 4146.74 FEET MSL
4 NOV. 83 1215 MST
ASCENSION NO. 11

AIR DATA
[illegible]0216011
PITA

SPECIFIC COORDINATES
33.1829[illegible] LAT (E)
106.1511[illegible] LON (E)

Table 14

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
4186.7	858.7	12.7	-6.4	30.0	1071.3	659.3	340.0	6.0	1.000259
4500.0	870.7	11.5	-7.9	24.8	1064.0	657.8	342.6	6.4	1.000253
5000.0	854.9	9.8	-12.1	20.0	1051.5	655.6	346.3	6.9	1.000246
5500.0	839.2	8.3	-13.9	20.7	1037.7	653.9	349.4	7.5	1.000242
6000.0	823.7	6.8	-13.3	21.7	1023.9	652.2	352.1	8.1	1.000239
6500.0	808.6	5.4	-14.2	22.6	1010.3	650.5	354.0	8.7	1.000235
7000.0	793.8	3.9	-14.9	23.8	996.9	648.8	346.2	9.4	1.000232
7500.0	779.3	2.5	-15.6	24.8	983.8	647.0	339.5	10.2	1.000228
8000.0	764.5	1.1	-20.3	15.9	963.5	647.7	331.0	10.9	1.000221
8500.0	750.3	1.1	-20.6	15.6	945.7	647.7	320.5	11.9	1.000217
9000.0	736.3	1.0	-20.6	15.3	928.2	647.6	312.0	13.1	1.000213
9500.0	722.6	1.1	-21.0	15.0	910.8	647.7	306.6	14.4	1.000209
10000.0	709.1	1.5	-20.7	15.0	892.5	646.1	302.1	15.8	1.000205
10500.0	695.9	1.7	-20.5	15.0	875.2	646.4	303.6	16.2	1.000201
11000.0	683.0	4.6	-19.6	15.0	856.2	649.4	306.4	16.4	1.000197
11500.0	670.4	4.0	-20.3	15.0	842.0	648.8	314.9	17.1	1.000194
12000.0	657.9	3.2	-20.9	15.0	828.9	647.8	323.7	18.4	1.000190
12500.0	645.6	2.0	-21.3	15.0	816.8	646.4	324.8	21.0	1.000187
13000.0	633.4	.8	-22.0	15.0	805.0	645.0	324.4	23.5	1.000184
13500.0	621.5	-.4	-23.0	15.0	793.4	643.6	318.7	25.5	1.000181
14000.0	609.9	-1.6	-24.8	15.0	781.9	642.2	314.4	27.1	1.000178
14500.0	598.5	-2.4	-25.5	15.0	769.5	641.2	311.5	27.6	1.000175
15000.0	587.4	-3.1	-26.0	15.0	756.7	640.4	309.5	28.0	1.000172
15500.0	576.4	-3.4	-25.1	16.6	743.2	640.0	308.7	28.1	1.000170
16000.0	564.8	-3.2	-23.3	21.2	728.4	640.3	308.2	28.0	1.000168
16500.0	553.4	-4.5	-22.2	23.4	717.7	639.8	307.9	27.7	1.000165
17000.0	542.2	-5.7	-22.3	25.6	707.1	639.3	307.5	27.3	1.000163
17500.0	531.1	-7.0	-22.4	27.8	696.6	638.8	306.7	27.1	1.000161
18000.0	520.4	-8.3	-22.7	30.0	686.6	638.3	305.8	26.8	1.000158
18500.0	510.0	-9.5	-23.0	32.2	676.5	637.8	304.6	26.8	1.000156
19000.0	500.0	-10.8	-23.4	34.5	666.6	637.2	303.6	27.0	1.000154
19500.0	490.4	-12.0	-23.7	40.4	656.6	636.8	303.4	27.9	1.000152
20000.0	480.8	-13.2	-23.6	47.5	646.6	636.4	303.2	28.8	1.000150
20500.0	471.5	-14.4	-21.6	54.1	636.7	636.9	303.4	29.9	1.000148
21000.0	462.4	-15.5	-22.3	55.7	626.7	635.6	303.5	30.9	1.000145
21500.0	453.6	-16.6	-23.0	57.3	616.6	634.2	303.5	31.3	1.000143
22000.0	445.0	-17.7	-23.8	58.9	607.1	632.9	303.6	31.6	1.000140
22500.0	436.5	-18.9	-24.9	59.0	597.6	631.4	304.2	32.3	1.000138
23000.0	427.7	-20.2	-25.4	57.2	588.7	630.0	304.9	33.0	1.000135
23500.0	419.0	-21.4	-27.5	57.6	579.4	628.5	304.7	33.1	1.000133

[illegible] Air data

[illegible] ALTITUDE 4106.74 FEET MSL — 35 50 21 0011 — GEODETIC COORDINATES

9 NOV. 83 — 1215 MST — PITA — 35.1029° LAT DEG

ASCENSION NO. 11 — 106.1511° LON DEG

Table 14 (cont'd)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
24000.0	410.5	-22.5	-29.6	57.6	570.2	616.9	304.5	33.2	1.000130
24500.0	402.8	-23.4	-30.1	53.9	560.5	615.6	304.2	34.2	1.000128
25000.0	395.7	-24.6	-32.0	49.9	551.6	614.3	304.0	35.5	1.000125
25500.0	388.6	-25.9	-34.0	45.9	543.0	612.7	304.7	36.5	1.000123
26000.0	377.0	-27.1	-35.1	41.9	534.5	611.1	305.7	37.3	1.000121
26500.0	369.6	-28.3	-37.9	38.7	525.7	609.7	306.0	38.2	1.000119
27000.0	361.8	-29.4	-39.7	35.6	517.0	608.3	307.2	36.4	1.000116
27500.0	354.2	-30.5	-41.0	32.5	508.4	607.0	307.7	34.5	1.000114
28000.0	346.8	-31.6	-43.3	29.4	500.0	605.6	308.2	32.5	1.000112
28500.0	339.5	-32.9	-44.7	29.2	491.9	604.9	308.4	30.4	1.000110
29000.0	332.0	-34.2	-45.9	29.3	484.0	604.2	308.4	29.3	1.000108
29500.0	324.8	-35.6	-47.0	29.5	476.2	603.5	307.9	29.8	1.000107
30000.0	317.8	-36.9	-48.1	29.7	468.6	602.8	307.6	30.3	1.000105
30500.0	311.0	-38.3	-49.3	29.9	461.1	602.1	308.0	31.4	1.000103
31000.0	304.2	-39.4	-50.1	18.9**	453.4	601.5	308.5	32.5	1.000101
31500.0	297.5	-40.5			445.4	600.7	311.0	33.1	1.000099
32000.0	290.8	-41.8			437.8	600.0	313.6	33.8	1.000098
32500.0	284.2	-43.1			430.4	599.3	315.6	34.5	1.000096
33000.0	277.9	-44.4			423.1	598.7	317.4	35.3	1.000094
33500.0	271.6	-45.7			415.9	598.0	318.9	35.7	1.000093
34000.0	265.5	-47.0			408.9	597.4	320.1	35.6	1.000091
34500.0	259.5	-48.3			402.0	596.7	321.4	35.4	1.000090
35000.0	253.7	-49.6			395.3	596.0	322.0	35.0	1.000088
35500.0	247.9	-50.9			388.6	595.3	322.0	34.5	1.000087
36000.0	242.1	-52.3			382.1	594.7	323.4	34.1	1.000085
36500.0	236.5	-53.6			375.7	594.0	324.5	33.8	1.000084
37000.0	231.0	-55.0			369.8	593.4	325.8	33.6	1.000082
37500.0	225.6	-56.4			363.5	592.7	327.5	33.7	1.000081
38000.0	220.2	-57.6			357.0	592.1	329.1	33.9	1.000079
38500.0	215.0	-58.9			350.5	591.4			1.000078
39000.0	209.8	-60.1			344.1	590.8			1.000076
39500.0	204.8	-60.9			338.1	590.1			1.000075

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE [illegible] FEET MSL
8 NOV. 83 1215 MST
ASCENSION NO. 11

MANDATORY LEVELS
31302[illegible]11
DATA

GEODETIC COORDINATES
33.1829 LAT DEG
106.1511 LON DEG

Table 15

PRESSURE (GEOPOTENTIAL		TEMPERATURE		RELHUM *	WIND DATA	
		AIR	DEWPOINT	PERCENT	DIRECTION	SPEED
MILLIBARS	FEET	DEGREES CENTIGRADE			DEGREES(TN)	KNOTS
850.0	5174.	9.3	-12.5	20.	347.3	7.1
800.0	6797.	4.5	-14.6	25.	349.3	9.1
750.0	8502.	3.1	-20.6	10.	320.4	11.9
700.0	10335.	3.4	-20.7	15.	302.6	16.1
650.0	12309.	2.5	-21.5	15.	324.5	20.0
600.0	14411.	-2.5	-25.4	15.	312.0	27.5
550.0	16668.	-4.0	-22.2	24.	307.8	27.5
500.0	19078.	-11.1	-23.5	35.	305.5	27.2
450.0	21722.	-17.2	-23.4	58.	305.8	31.4
400.0	24583.	-23.6	-30.4	53.	304.2	34.5
350.0	27736.	-31.1	-42.6	31.	308.1	35.4
300.0	31254.	-40.8			310.0	32.9
250.0	35248.	-50.4			322.4	34.7
200.0	39892.	-61.4				

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.